



IPRO 309

Orthotics and Prosthetics Education and Training in Latin America and the United States

Team Members



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Antonio - 5 years old - Congenital Scoliosis



Baby J - Club Foot



Problem:

- **In Latin America 2.5 million people have unmet orthotic and prosthetic needs**
- **No accredited Category III programs exist**
 - **Category III practitioners fabricate the devices**
- **Only 50 certified (10 in Colombia) and 1500 uncertified practitioners exist**
- **In Colombia alone over 250,000 people are waiting for treatment**

Solution:

- An accredited **Category III** program will be developed at **Centro Don Bosco** in **Bogotá, Colombia**
- **IPRO 309** will assist in this effort by creating several educational modules regarding the biomechanics of **O&P**



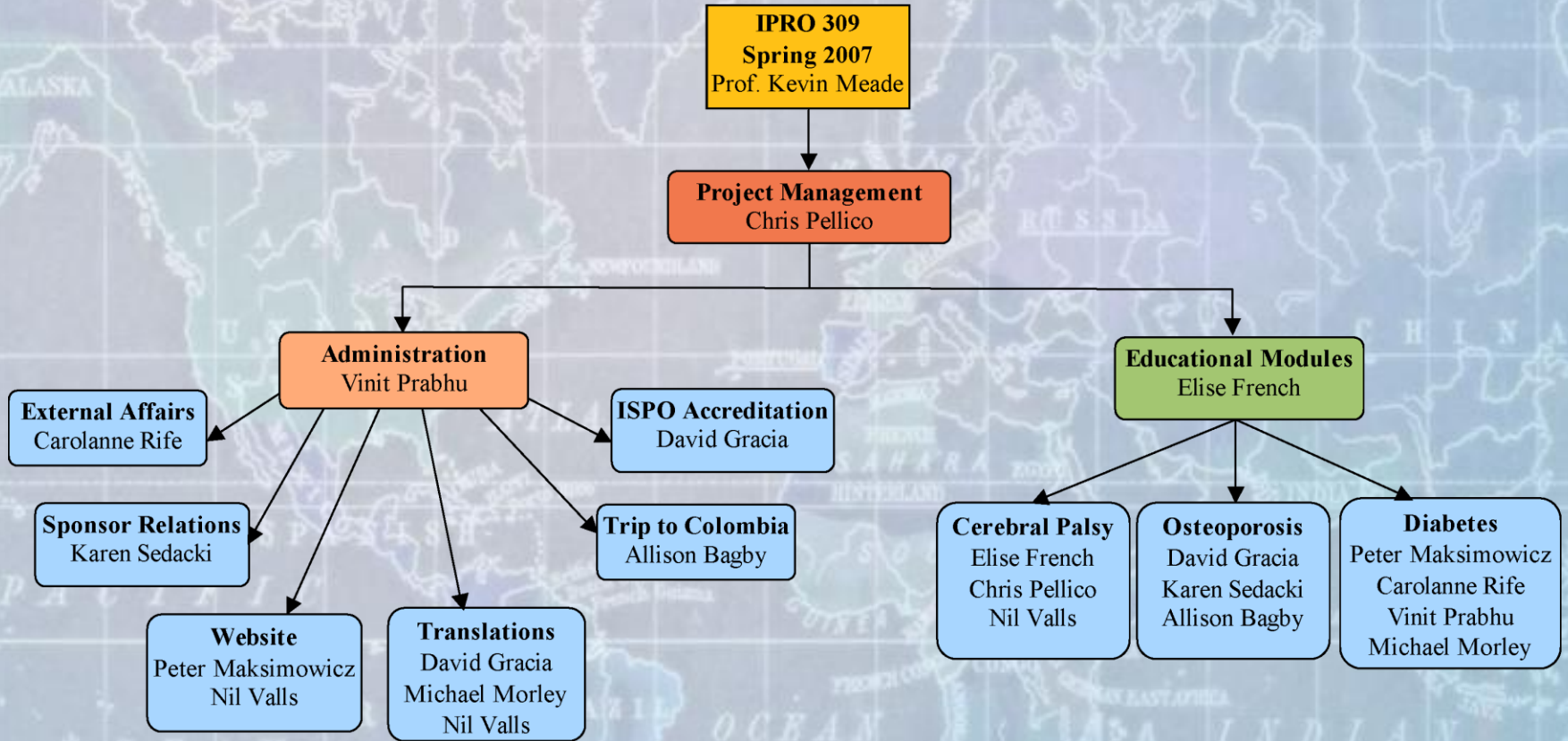
Previous IPRO Subgroup Breakdown

- **IPRO 309 Spring 2006 (<http://www.iit.edu/~ipro309s06>)**
 - **Five subgroups following the Northwestern University Prosthetic and Orthotic Center (NUPOC) educational structure**
 - **Biomechanics**
 - **Upper Limb O&P**
 - **Lower Limb O&P**
 - **Spine Orthotics**
 - **Materials**
- **IPRO 309 Fall 2006 (<http://www.iit.edu/~ipro309f06>)**
 - **Five subgroups following a clinical biomechanics structure:**
 - **Anatomical Landmarks and Orthometry Measurements**
 - **Range of Motion and Manual Muscle Testing**
 - **Dermatomes, Myotomes and Spinal Cord Injury**
 - **Evaluation of Standing and Seated Posture**
 - **Observational Gait Analysis and Crutches, Canes and Walkers**

Objectives:

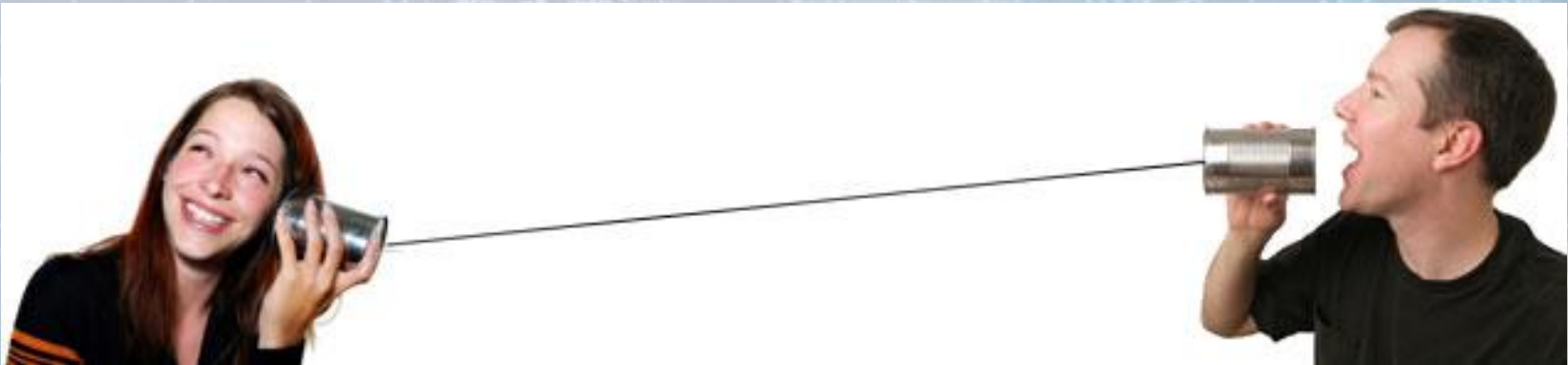
- **Develop educational modules**
- **Develop demonstrations and handouts to compliment the educational modules**
- **Translate all material to Spanish**
- **Create a four hour presentation for the O&P conference in Bogotá**
- **Work with educators in Colombia to develop a sister IPRO**

Work Breakdown



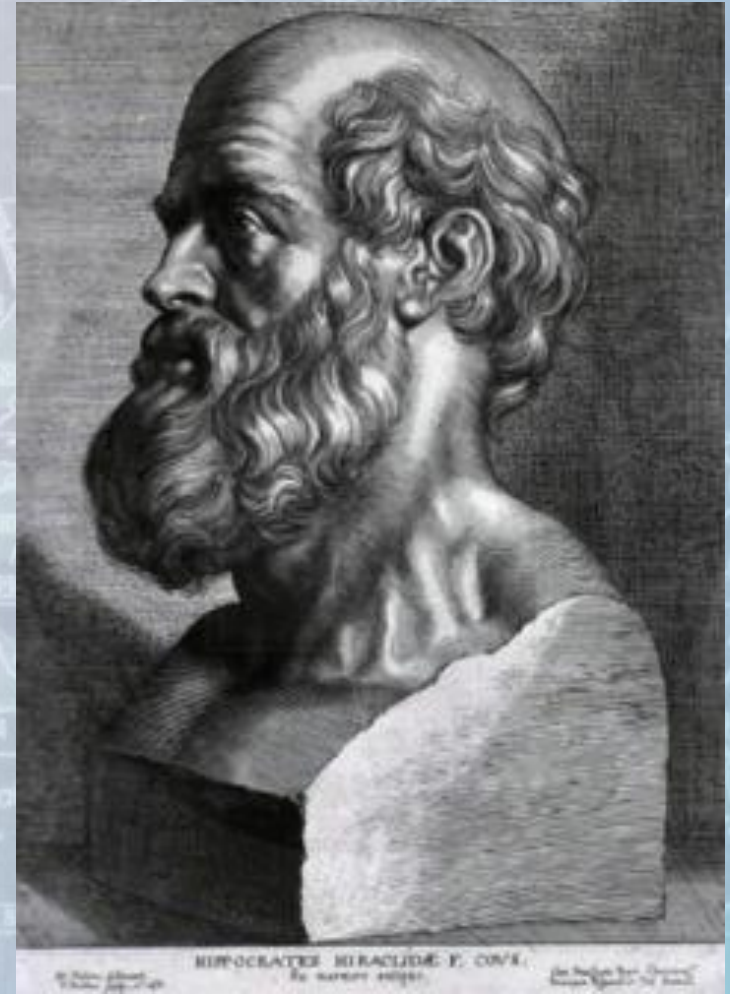
Team Management

- **Ice Breakers**
- **Survey**
 - **Measured Communication Levels**
 - **Suggestions for Improvement**
- **Post Survey**
 - **Team Communicated More Effectively**



Ethics

- **Hippocratic Oath**
 - **DO NO HARM**
- **Evidence Based Medicine**
- **Provide All Necessary Information**
 - **Some background**
 - **Physical effects and their orthotic treatment**
 - **Manufacturing of each device**



Accomplishments

• Three educational modules

Proximal Femoral Fracture

Causes

- Usually caused by falls indoors
- Dependant on bone strength
- Severity related to how effective the neuromuscular response is

High Prevalence

- One in six women who reach the age of 80 will suffer from a hip fracture
- The incidence is rising due to aging population, smoking, and more sedentary lifestyles



Distal Radius Fracture (Colle's Fracture)

- Caused when patients throw their hands forward in an attempt to break their fall



Hip Abduction Orthosis

Provide

- Support in immobilization
- Optimal positioning of flexion, extension, abduction, and adduction
- Prevents dislocation of hip

Uses

- Inoperable hip patients
- Post operative hip management
- Patient able to put on and off themselves



How is it made?

- No molds necessary— Universal pelvic, thigh, and hip joints with adjustable straps
- Each piece fitted separately to ensure a perfect fit



Materials

- Mesh pelvic and thigh components with padding for comfort
- Velcro straps adjust for a perfect fit
- Silicone skin adhesion system on pelvic and thigh cuffs to prevent rubbing and rotation
- Adjustable metal hinge aligned with hip joint



Newport Hinge

- Limits range of hip rotation
- 10o increments of flexion/extension control
- 7.5o increments of abduction/adduction control



Seat Lifts

- Assistive devices used to lift the body from a sitting position to a standing position
- Significantly reduces the stress on the hip associated with sitting down



• Website that allows users to download all educational materials (<http://www.iit.edu/~ipro309s07>)

Collaborating Organizations

- **Universidad de los Andes; Bogotá, Colombia**
- **La Escuela Colombiana de Rehabilitación; Bogotá, Colombia**
- **Centro Don Bosco, Bogotá; Colombia**
- **Laboratorio Gilete, Bogotá; Colombia**
- **Bioconcepts, Inc.; Burr Ridge, IL**
- **Dynamic Orthotics and Prosthetics; Houston, TX**
- **Children's Memorial Hospital; Chicago, IL**
- **Joliet Junior College Tech Prep Program; Joliet, IL (JJC)**
- **Northwestern University Prosthetics and Orthotics Center; Chicago, IL (NUPOC)**
- **Illinois Institute of Technology; Chicago, IL**

NUPOC

- **Continued support comes from the faculty at NUPOC**
 - **NUPOC's faculty has reviewed the educational modules and provided constructive feedback**
 - **NUPOC has allowed the group to visit its facilities to experience first hand the processes of fabricating orthotics and prosthetics**



Joliet Junior College (JJC)

- **Currently the educational modules are being used by JJC faculty to teach their introductory courses**
- **The faculty continues to provide feedback and suggest changes to the modules as they feel necessary**





Overall Impact

- **A Category III technician has the opportunity to advance and become a Category II technician**



- **A Category II technician can see patients on their own**
- **The program creates a career path not just a job**

Impact in Colombia

- **Category III O&P Technician x 250 patients/year x 20 years = 5000 patients/technician**
- **Each Graduating Class: 15 students x 5000 patients = 75000 patients helped during their careers**
- **Total cost per student to complete the program = \$3000**
- **Cost of Training per patient:
 $\$3000/5000 = \0.60**

* Actual Results

Se Habla Español

- **By translating all of the information to Spanish the program can help many more people**
 - **In Colombia all courses are taught in Spanish**
 - **At JJC several of the students speak Spanish**
 - **Although the course may be taught in English the materials will be available for review in Spanish**

Impact in the US

- **The JJC will be officially beginning their O&P program in the fall of 2008**
- **The modules are already being used and will continue to be used as the program advances**
- **The same numbers apply from Colombia: The first graduating class at JJC will have the opportunity to help over 75000 patients in their career**

Trip to Colombia

- The O&P conference will be held in Bogotá, Colombia from May 14th-May 17th
- Participants include Michael, Allison, Karen, Eduardo (F06) and Jared (F06)
- The group members will have a chance to present the educational modules



Bogotá Conference

Mayo 14 – 17, 2007

*A Realizarse en La Escuela Colombiana de Rehabilitación
Cra. 31 No. 151-68, Barrio Cedritos, Bogotá*

ECR

Institución Universitaria
Fundación Escuela Colombiana de Rehabilitación



LABORATORIO GILETE

Centro de Rehabilitación en Ortesis y Prótesis

ILLINOIS INSTITUTE
OF TECHNOLOGY



Universidad de los Andes

Centro Don Bosco

- The team will have a chance to visit Centro Don Bosco and talk with faculty and students who are enrolled in the program



Villavicencio

- In Villavicencio the team sees first hand how an O&P clinic functions



Future Work

- **IPRO 309 Fall 2007**
 - **Club Foot**
 - **Stroke**
 - **Spine Trauma**
- **Starting Colombia IPRO**
 - **Los Andes University**
 - **Goals: Bring Los Andes IPRO Team to IIT IPRO Day (May '08)**
- **Continued collaboration with JJC and NUPOC**



Antonio



Baby J



**Questions?
¿Preguntas?**